

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5 and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith et al. (U.S. 6,962,949).

3. Regarding claim 1, which recites an inkjet ink composition comprising a water-soluble dye having an anionic dissociable group, water, water-soluble solvent, and a cationic polymer, Smith discloses an ink composition comprising an anionic dye, water, water-soluble organic solvent, and an amine-based cationic polymer (col. 6, lines 52-57). The prior art further discloses an inkjet printing process for printing on various substrates (col. 22, lines 28-52) using the disclosed inks.

4. Regarding claim 2, which recites the cationic polymer in claim 1 to be a water-soluble polymer, the disclosed cationic polymer is inherently soluble in water because (i) it is a quaternary amine compound, (ii) the medium is water, (iii) the polymer is not prepared as an emulsion, and (iv) no solubilizing or dispersing agents are mentioned.

5. Regarding claims 3 and 4, claim 3 recites a method of producing an inkjet ink comprising the steps of mixing in advance a water-soluble dye having an anionic dissociable group and a cationic polymer in water to form a salt followed by preparing

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an ink after the resulting salt is desalted. Claim 4 is identical to claim 3 except that it refers to the ink of claim 1. Smith teaches a method of ink preparation wherein the anionic dye and the cationic polymer is mixed in water to form a salt, which is then solubilized with nonpolymeric salts so that the dye is playing the role of a counterion (col. 21, lines 33-46).

6. Regarding claim 5, which recites an ink for ink jet according to claim 1, the disclosed ink is for ink jet (col. 22, lines 28-52).

7. Regarding claims 8 to 10, claim 8 recites an ink set for ink jet comprising the ink of claim 1 and claims 9 and 10 recite an inkjet recording method using the ink of claim 1 and ink set of claim 8 on plain paper and ink jet exclusive paper. An ink set is implicitly disclosed in the prior art since ink compositions are set in plural form (col. 22, lines 14, 28) and dyes of various colors are employed (col. 13 & 14). An ink jet printing method is taught and different types of substrates are disclosed (col. 22, lines 28-52). The substrates include plain paper and ink jet paper (col. 25, line 17).

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

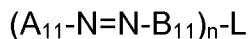
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9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

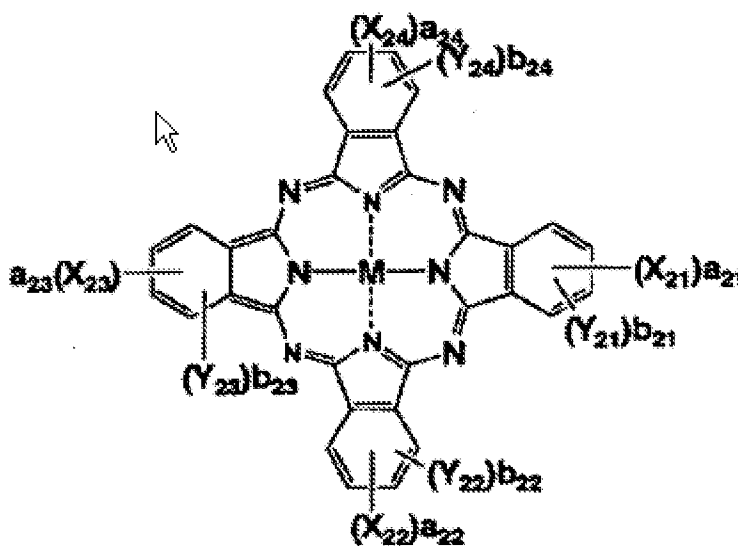
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (U.S. 6,962,949) in view of Yamanouchi et al. (US 2002/0107301).

11. Claim 6 specifies the dye in claim 1 to comprise at least one of compounds represented by the following general formulas: (1)

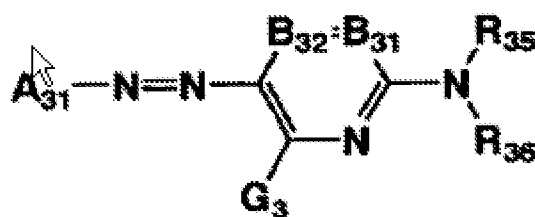


where  $A_{11}$ ,  $B_{11}$  independently represents a heterocyclic group substituted or not,  $n = 1$  or 2, and  $L$  is a substituent on  $A_{11}$  and  $B_{11}$  and can be a single bond or a connecting group; (2)

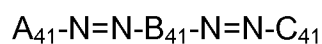


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(3)

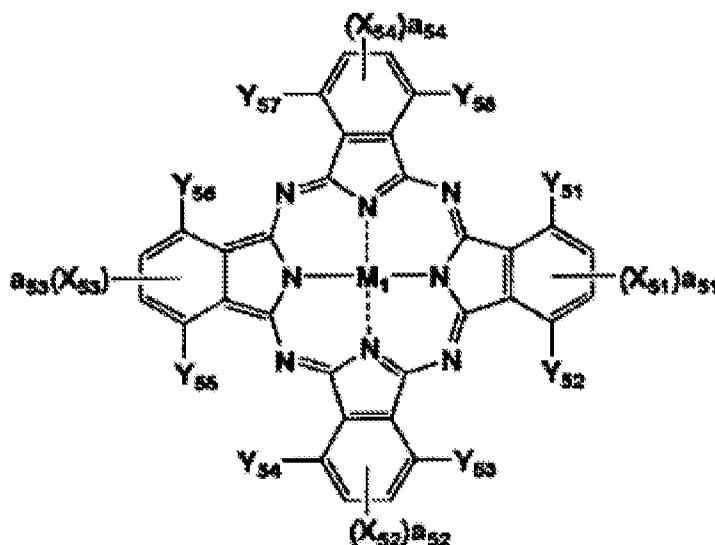


and (4)



where the definitions for the various groups, specified by the applicants, are not listed here but are fully considered.

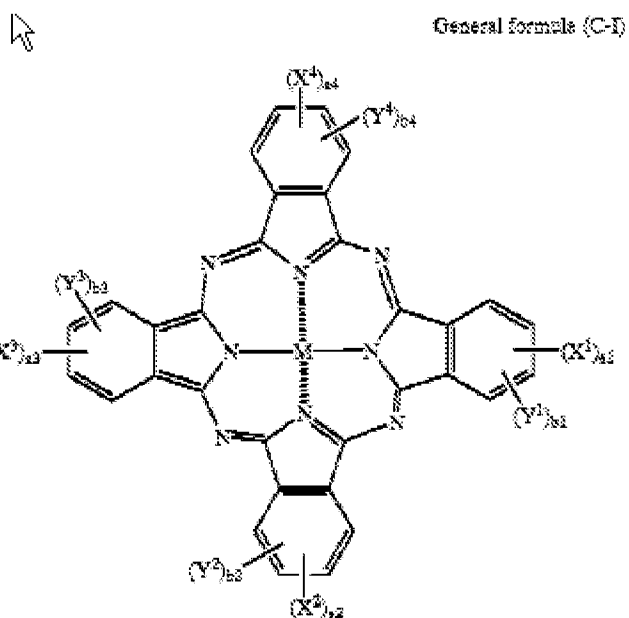
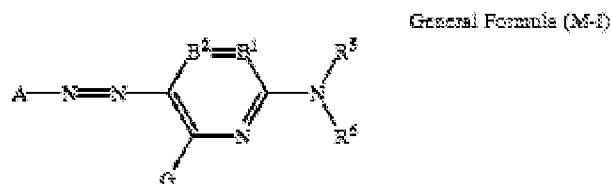
12. Claim 7 specifies the dye in claim 1 to be a species of the dye represented by formula (2) wherein said species has the following structure: (5)



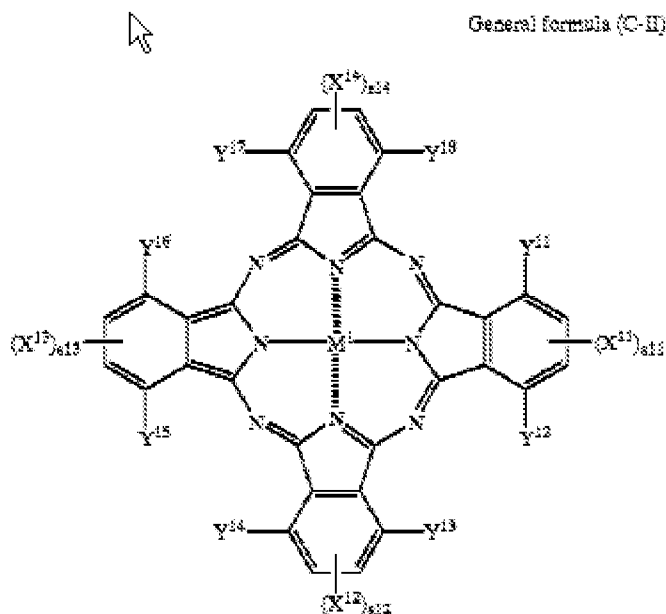
13. Smith discloses various dyes, including monoazo dyes, diazo dyes, and phthalocyanine dyes, including phthalocyanine sulfonate salts (col. 13, lines 43-45), but fails to specifically teach the recited species.

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14. Regarding the claimed dyes, Yamanouchi teaches an ink for ink jet recording comprising the following dyes (the first 2 in Abstract and the 3rd in [0207]):



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The definitions of the various groups are similar to those being claimed.

15. Clearly, compounds M-I, where A represents a heterocyclic group, correspond to the compounds represented by formula (1) having  $n = 1$ , and to the compounds represented by formula (3); compounds C-I correspond to those represented by formula (2); and compounds C-II correspond to the dyes represented by formula (5).

16. The disclosed dyes are all classified as azo dyes, diazo (or bis-azo) dyes, and phthalocyanine dyes. Further, they all comprise anionic groups, especially sulfo groups. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine the dyes taught by Yamanouchi with the ink composition taught by Smith due to the following motivations. First, both disclosures by Smith and Yamanouchi are in the same field of endeavor (ink for ink jet printing). Second, Smith employs water-soluble anionic monoazo dyes, diazo dyes, and phthalocyanine dyes (col. 13, lines 43-45) and the dyes disclosed by Yamanouchi are

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the species thereof. Third, both disclosures are directed to the same problem sought to be solved; that is, to enhance the fastness properties of the inks (Smith: col. 6, line 38; Yamanouchi: Abstract and [0013]). More importantly, the dyes disclosed by Yamanouchi are either readily available or synthesizable [0244]. Most importantly, the dyes disclosed by Yamanouchi have substitution groups that are electron-withdrawing groups which raise the oxidation potential of the dyes and thereby increase the ozone resistance property of the dyes [0233].

### ***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vu Nguyen whose telephone number is (571)270-5454. The examiner can normally be reached on M-F 7:30-5:00 (Alternating Fridays).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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